



MATERIAL SAFETY DATA SHEET

PRODUCT ACTI-BROM 2599 TABLETS

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: ACTI-BROM 2599 TABLETS

DESCRIPTION: Bromochlorodimethylhydantoin

NFPA 704M/HMIS RATING: 3/3 HEALTH 1/1 FLAMMABILITY 0/0 REACTIVITY OXY OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX. %
1-bromo-3-chloro-5,5-dimethylhydantoin	16079-88-2	25.2

SECTION 3 PRECAUTIONARY LABEL INFORMATION

DANGER: Corrosive. Causes eye and skin damage. May be harmful or fatal if swallowed. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Irritating to nose and throat. Avoid breathing dust. Remove and wash contaminated clothing before reuse.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES:	Immediately flush for at least 15 minutes while holding eyelids open. Call a physician at once.
SKIN:	Brush off and immediately flush with water for at least 15 minutes. Call a physician at once.
INGESTION:	Feed bread soaked in milk, followed by olive oil or cooking oil. Do not induce vomiting. Call a physician at once.
INHALATION:	Remove to fresh air. Treat symptoms. Call a physician at once.

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.



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SECTION 4 FIRST AID INFORMATION

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NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsions may be needed.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: Corrosive to the eyes with possible permanent damage depending on the length of exposure and on the first aid action given.

SKIN CONTACT: Causes burns if skin is wet.

INGESTION: Can be fatal.

INHALATION: Irritating to nose and throat.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure not previously mentioned, or identified in Section 6 or 14.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: Acute toxicity studies have been conducted on this product along with one of its decomposition products. The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS):

1-bromo-3-chloro-5,5-dimethylhydantoin LD₅₀ = 1.39 g/kg

5,5-dimethylhydantoin LD₅₀ = Greater than 5,000 mg/kg

ACUTE DERMAL TOXICITY (ALBINO RABBITS):

1-bromo-3-chloro-5,5-dimethylhydantoin LD₅₀ = Greater than 2.0 g/kg

5,5-dimethylhydantoin LD₅₀ = Greater than 3,000 mg/kg

PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):

SKIN IRRITATION INDEX DRAIZE RATING: 6.1/8.0 Corrosive -

1-bromo-3-chloro-5,5-dimethylhydantoin

COMMENTS: Prolonged or repeated skin contact produced severe redness and superficial, focal necrosis with the development of excessive exfoliation due to the corrosive action of the compound.



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SECTION 6 TOXICOLOGY INFORMATION

(CONTINUED)

PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):

SKIN IRRITATION INDEX DRAIZE RATING: 0.8/8.0 Slightly irritating -
5,5-dimethylhydantoin

COMMENTS: The application of 500 mg of 5,5-dimethylhydantoin produced slight redness and swelling after 24 hours of occluded contact with rabbit skin. All application sites appeared normal within 72 hours.

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):

1-bromo-3-chloro-5,5-dimethylhydantoin

COMMENTS: Eye contact with the powdered material produced severe persistent conjunctival irritation with slowly developing corneal involvement. Immediate rinsing of the eyes with water decreased ocular injury. Diluted solutions (less than 1,000 ppm) produced essentially no irritation.

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):

EYE IRRITATION INDEX DRAIZE RATING: 12.8/110.0 unrinsed, 20.0/110.0
rinsed Mild irritant - 5,5-dimethylhydantoin

COMMENTS: Instillation of 100 mg produced moderate redness and swelling of the conjunctiva after one hour. Small focal corneal opacities and slight iritis were observed in one of the test rabbits. Irritation decreased over the following 48 hours and had completely resolved by the end of 7 days. Rinsing the affected eyes with water 30 seconds after contact with the test material resulted in only a slight reduction in irritation.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: White	FORM: Tablets	ODOR: Faint halogen
BULK DENSITY:	50 lbs/ft ³	
MELTING POINT:	292 - 302 Degrees F	ASTM D-2117
FLASH POINT:	Not applicable	

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: Not applicable

EXTINGUISHING MEDIA: Water. Do not use ammonium phosphate fire extinguishers.



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SECTION 8 FIRE AND EXPLOSION INFORMATION

(CONTINUED)

UNUSUAL FIRE AND EXPLOSION HAZARD: Will evolve hydrogen bromide or bromine under fire conditions.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Avoid contact with organic materials. Mix only with water. Use clean, dry utensils and equipment. Do not add this product to any dispensing device containing remnants of any other product. Such use may cause a violent reaction leading to fire and explosion. Contamination with moisture, organic matter or other chemicals may start a chemical reaction with generation of heat, hazardous gases and possible fire and explosion. In cases of contamination or decomposition, do not reseal container. If possible, isolate container in open air or well ventilated area. If necessary, flood with large volumes of water.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂, HCl, HBr, Br, Cl may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: If it is possible to generate significant levels of dust, a NIOSH approved or equivalent self-contained or supplied air respirator is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Wear gloves, boots, apron and a face shield with chemical splash goggles (ANSI Z 87.1 requirements and selection of gloves, goggles, shoes, etc.).

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Solid spills: Sweep or vacuum up and reclaim into recovery or salvage



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SECTION 11 SPILL AND DISPOSAL INFORMATION

(CONTINUED)

drums for disposal. Wear the protective equipment specified in Section 10. Refer to CERCLA in Section 14.

This product is toxic to fish. It should not be directly discharged into lakes, ponds, streams, waterways or public water supplies.

DISPOSAL: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under the Resources Conservation and Recovery Act (RCRA) 40 CFR 261. Hazardous Waste D001.

As a hazardous solid waste, it must be disposed of in a licensed Hazardous Waste Treatment, Storage and Disposal facility in accordance with local, state, and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

This product is toxic to fish. Do not discharge into lakes, streams, ponds or public water unless in accordance with an NPDES permit. For guidance, contact your regional office of the EPA.

Aquatic toxicity studies were run on 1-bromo-3-chloro-5,5-dimethylhydantoin the results are below:

Fresh Water Species:

96 hour static acute LC_{50} to Rainbow Trout = 0.87 ppm
48 hour static acute LC_{50} to Water Flea = 0.47 ppm
96 hour static acute LC_{50} to Fathead Minnow = 2.25 ppm

Salt Water Species:

96 hour static acute LC_{50} to Sheepshead Minnow = 20 ppm
96 hour static acute LC_{50} to Grass Shrimp = 13 ppm
96 hour static acute LC_{50} to American Oyster = Greater than 640 ppm

Aquatic toxicity studies were also run on 5,5-dimethylhydantoin the dehalogenated byproduct:

96 hour static acute LC_{50} to Rainbow Trout = 6,100 ppm
48 hour static acute LC_{50} to Water Flea = 1,300 ppm
96 hour static acute LC_{50} to Fathead Minnow = 8,100 ppm
96 hour static acute LC_{50} to Sheepshead Minnow = 13,300 ppm
96 hour static acute LC_{50} to Grass Shrimp = 12,000 ppm
96 hour static acute LC_{50} to American Oyster = 14,200 ppm

If released into the environment, see CERCLA in Section 14.



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SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - OXIDIZING MATERIAL, N.O.S.

OXIDIZER UN 1479

CONTAINS

- HALOGENATED HYDANTOIN

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:

Based on our hazard evaluation, the following ingredient in this product is hazardous and the reason is shown below.

1-bromo-3-chloro-5,5-dimethylhydantoin - Corrosive, oxidizer

Nuisance dust = TWA 10 mg/m³ (total dust) ACGIH/TLV

Nuisance dust = TWA 5 mg/m³ (total dust) OSHA/PEL
15 mg/m³ (respirable dust) OSHA/PEL

CERCLA/SUPERFUND, 40 CFR 117, 302:

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS
(40 CFR 370):

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:

XX Immediate (acute) health hazard
-- Delayed (chronic) health hazard
XX Fire hazard
-- Sudden release of pressure hazard
-- Reactive hazard

Under Section 311, submittal of MSDS's or a list of product names to the local emergency planning commission, state emergency response commission and local



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SECTION 14 REGULATORY INFORMATION

(CONTINUED)

fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever is less, of an extremely hazardous substance.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product does not contain ingredients (at a level of 1% or greater) on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

This product is a biocide exempted under TSCA and regulated under FIFRA. The inerts are on the Inventory list.

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA):

EPA Reg. No. 5785-62-1706.

This product is registered for use as a microorganism control chemical used in industrial recirculating cooling water tower systems. In all cases follow instructions on the product label.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:

If this product becomes a waste, it does meet the criteria of a hazardous waste under RCRA 40 CFR 261 (consult Section 11).

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15

(formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):

None of the ingredients are specifically listed.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:

This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:

None of the chemicals on the current Proposition 65 list are known to be present in this product.

MICHIGAN CRITICAL MATERIALS:

This product does not contain ingredients listed on the Michigan Critical Materials Register.

STATE RIGHT TO KNOW LAWS:

This product does not contain ingredients listed by State Right To Know Laws.



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SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

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DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

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REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE



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SECTION 17 BIBLIOGRAPHY

(CONTINUED)

WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of
Governmental Industrial Hygienists, OH.

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